PRABHAT KUMAR MAURYA

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SUMMARY

- Currently, pursuing a Ph.D. in Computational Fluid Dynamics at IIT Madras
- Pursued a Certification in Data Science & AI at IIT Madras through INTELLIPAAT

EDUCATION

IIT MADRAS, Tamil Nadu
June 2018 – Present
PhD, Ocean Engineering (CGPA: 8.8)

IIT ROORKEE, Uttarakhand
June 2015 – July 2017
M.Tech, Disaster Mitigation and Management (CGPA: 7.6)

PSIT KANPUR, Uttar Pradesh
June 2010-July 2014
B.Tech, Mechanical Engineering (Percentage: 75)

UNIVERSITY PROJECTS

Research Project

- Developing a hybrid model that combines mesh-based and meshfree methods and apply it to simulate fluid-structure interaction in the context of free surface waves.

Post Graduation Project

- Utilized ArcGIS to employ supervised classification methods, specifically the maximum likelihood approach and minimum distance, for classifying a high-resolution image into various categories.

Graduation Project

- Develop a Wave Energy Converter (WEC) that utilizes the heaving motion induced by waves on a floating buoy to generate electrical energy.

DATA SCIENCE PROJECTS

Machine Predictive Maintenance:

- Developed a random forest-based classification model to predict the maintenance requirement of machines based on the wear and tear of the machine at different temperatures, speeds, and torque levels.
- The classification model achieved a Recall rate of approximately *71%.*

Mechanical Properties Prediction of Materials:

- Developed a decision-tree-based classification model to categorize materials based on their properties, including tensile strength, shear strength, Poisson's ratio, density, and more.
- The classification model demonstrated a Precision rate of approximately *87%.*

Earthquake Damage Prediction:

- Developed a classification model for categorizing buildings into distinct damage zones. This model utilized information such as building material, floor details, and building type as features.
- The model achieved an f1-score of approximately *66%* and a recall of around *61%.*

Image Classification Model:

- Designed a convolutional neural network (CNN) model and trained it using a pre-existing model (VGG16) to classify images in new datasets. The model achieved an impressive accuracy rate of nearly *82%*.

LANGUAGE AND TOOLS

Python, MATLAB, Fortran , Basic SQL, PowerBI, Microsoft Azure

KEY SKILLS

- Probability and Statistics
- Machine Learning
- Computational Fluid Dynamics
- Neural Network
- Data Visualization
- Finite Element Analysis

INTERSHIP & WORKSHOPS

- 3rd International workshop Numerical and Experimental Modelling of Wave-Structure Interaction (NEMWSI), IIT MADRAS
- Short Course on Large Eddy Simulation (LES) applied to Hydrodynamics, IIT MADRAS
- Explored the operational mechanisms of boilers and turbines within a power generation facility during an educational stint at the National Thermal Power Corporation (NTPC) Unchahar.